

CLAIMS

1. Device for positioning a tool (23) in relation to an object to be processed (2), comprising toolholder means (24; 250) suitable for bearing said tool (23) and an adjustable member (25; 163) operationally associatable with said toolholder means (24), characterised in that it furthermore comprises a stop member (31; 173) suitable for tightening said toolholder means (24; 250) against said adjustable member (25; 163).
2. Device according to claim 1, wherein said adjustable member (25) comprises a block (25) actuated to slide in a sliding direction (F4) by adjusting means (26) and provided with a tilted face (29) suitable for interacting with a correspondingly tilted active surface (30) of said toolholder means (24).
3. Device according to claim 2, wherein said stop member (31) translates said toolholder means (24) in a further sliding direction (F5) transverse in relation to said sliding direction (F4).
4. Device according to claim 2, or 3, wherein said stop member (31) comprises a further tilted face (35) suitable for interacting with a further correspondingly tilted active surface (36), opposite said active surface (30), of said toolholder means (24).
5. Device according to any of claims 2 to 4, wherein said adjusting means comprises micrometric screw means (26) rotatably coupled with said block (25).
6. Device according to any of claims 2 to 5, wherein said block (25) comprises stop plane means (27) sliding on frame means of said apparatus.

7. Device according to any preceding claim, wherein said stop member (31) comprises further stop plane means (33) sliding on frame means of said apparatus.
8. Device according to any preceding claim, and
5 furthermore comprising actuating means (32) arranged to transfer said stop member (31) between a work position (C), wherein said stop member (31) interacts with said toolholder means (24), and a rest position (D), wherein said stop member (31) does not interact
10 with said toolholder means (24).
9. Device according to claim 8, and furthermore comprising further actuating means (38) arranged to move said toolholder means (24), when said stop member (31) is in said rest position (D).
- 15 10. Device according to claim 1, wherein said adjustable member comprises abutting means (165) associatable with a block (164) integral with a frame (252) of said apparatus.
11. Device according to claim 10, wherein the distance
20 between an active zone (174) of said abutting means (165) and said block (164) is adjustable.
12. Device according to claim 11, wherein between said active zone (174) and said block (164) a spacer (169) is removably interposed.
- 25 13. Device according to claim 12, wherein said spacer (169) belongs to a group of spacers, the spacers of said group of spacers having different thicknesses from one another.
14. Device according to any of claims 10 to 13, wherein
30 said abutting means (165) comprises a head (170) of a screw provided with a shaft screwable in a hole obtained in said block (164).

15. Device according to claim 14 when appended to claim 12, or 13, wherein said spacer is provided with a passage for said stem.
- 5 16. Device according to any of claims 10 to 15, wherein said abutting means (165) is shaped in such a way as to receive resting upon it a portion (157) of said toolholder means (250), when said toolholder means (250) is in an advanced work position (L).
- 10 17. Device according to any of claims 10 to 16, and furthermore comprising a stop element (168) shaped in such a way as to receive resting thereupon a further portion (156) of said toolholder means (250), when said toolholder means is in a retracted rest position (M).
- 15 18. Device according to claim 17, wherein said stop element (168) is fixed to said block (164).
19. Device according to any of claims 10 to 18, wherein said stop member comprises tooth means (173) movable between a locking configuration (W1), wherein tooth means (173) prevents said toolholder means (250) from moving in relation to said frame (252), and a release configuration (W2), wherein said tooth means (173) allows said toolholder means to move in relation to said frame (252).
- 20 20. Device according to claim 19, wherein said tooth means (173) is rotationally supported on said frame (252).
- 25 21. Device according to claim 19, or 20, when claim 19 is appended to claim 16, or to claim 17, or 18, when they are appended to claim 16, wherein, in said locking configuration (W1) said tooth means (173) interacts with a part (158) of said toolholder means (250) to keep said toolholder means (250) in said advanced work position (L).
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22. Device according to claim 21, wherein said part comprises further abutting means (158) projecting from a side face (162) of said toolholder means (250).
23. Device according to claim 22, wherein said further
5 abutting means (158) comprises a further head (159) of a further screw provided with a further shank suitable for engaging in hole means (161) obtained in said toolholder means (250).
24. Device according to any of claims 10 to 23, wherein
10 said toolholder means comprises plate means (250) sliding along guide means (253) fixed to said frame (252).
25. Device according to claim 24, wherein said plate means
15 (250) is provided with opening means (251) inside which said abutting means (165) is positioned.
26. Device according to claim 25, wherein said opening means (251) comprises a first edge zone (155), more distant from said tool (23), and a second edge zone (156), nearer said tool (23).
- 20 27. Device according to claim 26, when appended to claim 16, or to any of claims 17 to 25 when appended to claim 16, wherein said portion (157) is obtained in said first edge zone (155).
28. Device according to claim 27, wherein said portion
25 comprises yet further abutting means (157) extending towards the inside of said opening means (251).
29. Device according to claim 28, wherein said yet further
30 abutting means (157) comprises a yet further head (159) of a yet further screw provided with a yet further shank suitable for engaging in a yet further hole (161) obtained in said plate means (250).
30. Device according to any of claims 26 to 29, when claim 26 is appended to claim 17, or to any claim 18 to 25

when appended to claim 17, wherein said further portion is obtained in said second edge zone (156).

31. Device according to any preceding claim, and furthermore comprising monitoring means (39) arranged to monitor said tool (2).

32. Device according to claim 31, wherein said monitoring means (39) comprises camera means (40).

33. Device according to claim 31, or 32, wherein said monitoring means (39) comprises position sensor means (63) arranged to detect the position of said tool.

34. Device according to any preceding claim, and furthermore comprising detecting means (62) arranged to detect characteristics of said object (2).

35. Device according to claim 34, wherein said detecting means (62) comprises temperature sensor means arranged to detect the temperature of said object (2).

36. Device according to claim 34, or 35, wherein said detecting means (62) comprises colour sensor means arranged to detect the colour of said object (2).

37. Device according to any preceding claim wherein said tool comprises incision knife means (23) of an apparatus for the production of caps (2).

38. Apparatus for the production of caps (2), comprising first operating turntable means (3) associated with first operating means (52) and further operating turntable means (4) associated with further operating means (5), characterised in that between said first operating turntable means (3) and said further operating turntable means (4) are interposed transfer turntable means (6) such as to transfer said caps (2) between said first operating turntable means (3) and said further operating turntable means (4).

39. Apparatus according to claim 38, wherein said first operating means comprises folding means (52; 108)

arranged to fold fixing promoting means (54; 106) with which said caps (2) are provided.

40. Apparatus according to claim 38, or 39, wherein said further operating means comprises cutting means (5) arranged to make nominal cutting line means in a parallel wall of said caps (2).

41. Apparatus according to any of claims 38 to 40, and furthermore comprising further transfer turntable means (7) such as to pick up said caps (2) from said further operating turntable means (4).

42. Apparatus for the production of caps (2), comprising first operating turntable means (3) associated with first operating means (52) and further operating turntable means (4) associated with further operating means (5), characterised in that between said first operating means (52) and said second operating means (5) monitoring means (39) is interposed arranged to monitor said caps (2).

43. Apparatus according to claim 42, wherein said first operating means comprises folding means (52; 108) arranged to fold fixing promoting means (54; 106) with which said caps (2) are equipped.

44. Apparatus according to claim 42, or 43, wherein said second operating means comprises cutting means (5) arranged to make nominal cutting line means in a side wall of said caps (2).

45. Apparatus according to any of claims 42 to 44, wherein said monitoring means (39) comprises camera means (40).

46. Apparatus according to any of claims 42 to 45, and furthermore comprising, downstream of said monitoring means (39), evacuation means suitable for evacuating caps (2) that have been deemed not to conform to a preset quality standard by said monitoring means (39).

47. Apparatus for the production of caps (2), comprising chamber means (60) isolated from an external environment and arranged to receive said caps (2) to enable said caps to be subjected to controlled treatments .
48. Apparatus according to claim 47, wherein with said chamber means (60) adjusting means is associated arranged to adjust the temperature inside said chamber means (60).
49. Apparatus according to claim 47, or 48, wherein with said chamber means (60) irradiation means is associated arranged to irradiate said caps (2).
50. Apparatus according to any of claims 47 to 49, wherein with said chamber means (60) cleaner means is associated arranged to conduct cleaning operations of said caps (2).
51. Apparatus according to any of claims 47 to 50, wherein said chamber means (60) is associated with turntable means (3, 4, 6, 7) arranged to transfer said caps (2).
52. Apparatus according to claim 51, wherein said turntable means comprises transfer turntable means (6) arranged to transfer said caps from first operating turntable means (3) of said apparatus to second operating turntable means (4) of said apparatus.
53. Apparatus according to claim 52, wherein with said first operating turntable means (3) folding means (52; 108) is associated arranged to fold fixing promoting means (54; 106) with which said caps (2) are provided.
54. Apparatus according to claim 52, or 53, wherein with said second operating turntable means (4) cutting means (5) is associated arranged to make nominal cutting line means in a side wall of said caps (2).
55. Apparatus according to claim 51, wherein said turntable means comprises transfer turntable means (7)

arranged to pick up said caps from operating turntable means (4) of said apparatus and evacuate them from said apparatus.

56. Apparatus for the production of caps (2), comprising
5 cutting means (5) arranged to make on said caps (2) nominal cutting line means, characterised in that it furthermore comprises sensor means (62) operationally associated with said cutting means (5) in such a way as to monitor the positioning of said cutting means
10 (5) in relation to said caps (2).

57. Apparatus according to claim 56, wherein said sensor means (62) comprises position sensor means (63) arranged to detect thermal dilations of incision knife means (23) of said cutting means (5).

58. Apparatus according to claim 56, or 57, wherein said sensor means (62) comprises temperature sensor means arranged to detect the temperature of said caps (2).

59. Apparatus according to any of claims 56 to 58, wherein said sensor means (62) comprises colour sensor means
20 arranged to detect the colour of said caps (2).

60. Apparatus for the production of caps, comprising folding means for folding fixing promoting means (106) inside said caps (2), characterised in that said folding means comprises articulated folding means
25 (108) provided with an operating zone (151, 152) movable between an inactive position, wherein said operating zone (151, 152) is positioned outside said caps (2), and a work position, wherein said operating zone (151, 152) is received inside said caps (2) to fold said fixing promoting means (106) inside said
30 caps (2).

61. Apparatus according to claim 60, wherein said articulated folding means (108) comprises rocker arm

means (149) provided with an end at which said operating zone (151, 152) is obtained.

62. Apparatus according to claim 61, wherein said operating zone comprises roller means (52) rotationally supported on said end.

63. Apparatus according to claim 61, or 62, wherein said rocker arm means (149) comprises a further end (154) cooperating with rod means (138).

64. Apparatus according to any of claims 60 to 63, wherein said articulated folding means (108) is associated with seat means (107) arranged to receive said caps (2).

65. Apparatus according to claim 64, wherein said seat means (107) are arranged substantially angularly spaced at an equal distance from one another on turntable means (103).

66. Apparatus according to claim 64, or 65, and furthermore comprising lifting organs (117) suitable for translating said caps (2) from a bottom supply position to an intermediate position inside said seat means (107).

67. Apparatus according to claim 66, wherein said lifting organs (117) transfer caps (2) from said intermediate position to a top position wherein said folding means (108) takes on said work position.

68. Apparatus according to claim 66, or 67, wherein said articulated folding means (108) is assembled on an element actuated to run along a body (119) of said apparatus by said lifting organs (117).

69. Apparatus for the production of caps, comprising folding means (52) arranged to fold fixing promoting means with which said caps (2) are provided and cutting means arranged to make nominal cutting line means in a side wall of said caps (2), characterised

in that said cutting means is coaxial to said folding means (52) and is arranged outside said folding means (52).

- 5 70. Apparatus according to claim 69, wherein outside a spindle body of said cutting means there is provided a collar (148) of said folding means (52).
- 10 71. Apparatus according to any of claims 38 to 41 and/or according to any of claims 42 to 46 and/or according to any of claims 47 to 55 and/or according to any of claims 56 to 59 and/or according to any of claim 60 to 68 and/or according to claim 69, or 70.
72. Apparatus according to any of claims 38 to 71, and comprising a device according to any of claims 1 to 37.
- 15 73. Apparatus according to any of claims 38 to 72, and furthermore comprising a pressurized air recovery device (44).
- 20 74. Apparatus according to claim 73, wherein said pressurized air recovery device (44) is connected to suction means associated with cutting means (5) of the apparatus and arranged to pick up flashing arising from the interaction between said cutting means (5) and said caps (2).
- 25 75. Apparatus according to claim 73, or 74, wherein said pressurized air recovery device (44) is connected to further suction means associated with further cutting means (37) arranged to remove appendages of respective casting feedheads from said caps (2).
- 30 76. Apparatus according to claim 74, or according to claim 75 when appended to claim 74, wherein said pressurized air recovery device (44) comprises conduit means (50) cooperating with filter means (51) arranged to withhold said flashing.

77. Apparatus according to claim 75, or according to claim 76 when appended to claim 75, wherein said pressurized air recovery device (44) comprises further conduit means (45) cooperating with further filter means (46) arranged to withhold said appendages.
78. Apparatus according to claim 77 when appended to claim 76, wherein said conduit means (50) and said further conduit means (45) flow into manifold means (47).
79. Apparatus according to claim 78, wherein with said manifold means (47) fan means is associated (48).
80. Apparatus according to claim 79, wherein said manifold means (47) supplies pneumatic conveying means (8) arranged to transfer said caps (2) to operating turntable means (3, 4) of said apparatus.
81. Apparatus according to any of claims 38 to 80, and furthermore comprising heating means (5) arranged to heat operating means of said apparatus.
82. Apparatus according to claim 81, and furthermore comprising rotating electric commutator means (56) arranged to connect said operating means to current feeder means associated with frame means of said apparatus.
83. Apparatus according to claim 82, wherein said operating means is movable in relation to said frame means.
84. Apparatus according to any of claims 81 to 83, wherein said operating means comprises folding means (52) arranged to fold fixing promoting means (54) with which said caps (2) are provided.